

**HISTORY INFORMATION FOR THE FOLLOWING MANUAL:**

# ***SERVICE MANUAL***

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**AZ1-L Chassis**

***ORIGINAL MANUAL ISSUE DATE: 2/2010***

<b>Version</b>	<b>Date</b>	<b>Subject</b>
1.0	2/2010	No revisions or updates

**LCD Digital Color TV**

**SONY®**

# ***SERVICE MANUAL***

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***AZ1-L Chassis***

**LCD Digital Color TV**

**SONY®**

# MODEL LIST

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<i>MODEL</i>	<i>COLOR</i>	<i>COMMANDER</i>	<i>DESTINATION</i>
<b>KDL-32EX305</b>	<i>BLACK</i>	<i>RM-YD047</i>	<i>ARGENTINA</i>
<b>KDL-32EX305</b>	<i>BLACK</i>	<i>RM-YD047</i>	<i>LATIN AMERICA</i>
<b>KDL-32EX306</b>	<i>BLACK</i>	<i>RM-YD047</i>	<i>ARGENTINA</i>
<b>KDL-32EX306</b>	<i>BLACK</i>	<i>RM-YD047</i>	<i>LATIN AMERICA</i>
<b>KDL-32EX405</b>	<i>BLACK</i>	<i>RM-YD047</i>	<i>ARGENTINA</i>
<b>KDL-32EX405</b>	<i>BLACK</i>	<i>RM-YD047</i>	<i>LATIN AMERICA</i>

<i>MODEL</i>	<i>COLOR</i>	<i>COMMANDER</i>	<i>DESTINATION</i>
<b>KDL-40EX405</b>	<i>BLACK</i>	<i>RM-YD047</i>	<i>ARGENTINA</i>
<b>KDL-40EX405</b>	<i>BLACK</i>	<i>RM-YD047</i>	<i>LATIN AMERICA</i>
<b>KDL-40EX406</b>	<i>BLACK</i>	<i>RM-YD047</i>	<i>ARGENTINA</i>
<b>KDL-40EX406</b>	<i>BLACK</i>	<i>RM-YD047</i>	<i>LATIN AMERICA</i>
<b>KDL-46EX405</b>	<i>BLACK</i>	<i>RM-YD047</i>	<i>ARGENTINA</i>
<b>KDL-46EX405</b>	<i>BLACK</i>	<i>RM-YD047</i>	<i>LATIN AMERICA</i>

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# SPECIFICATIONS

Sistema	
Sistema de TV	Digital: SBTVD (para los modelos series EX406/EX405/EX306/EX305)
Cobertura de canales	VHF: 2-13, UHF: 14-69 CATV (Análogo): 1-125
Sistema del panel	Panel LCD (pantalla de cristal líquido)
Salida de bocinas	10 W + 10 W
Tomas de entrada/salida	
CABLE/ANTENNA (Cable/Antena)	Terminal externo de 75 ohmios para entrada de señal de radiofrecuencia
VIDEO IN 1/2/3 (Entrada de video 1/2/3)	VIDEO / AUDIO
COMPONENT IN 1/2 (Entrada de componente 1/2)	YPbPr (video componente) Formato de señal: 480i, 480p, 576i, 576p, 720p, 1080i, 1080p AUDIO
HDMI IN 1/2/3/4 (Entrada HDMI 1/2/3/4)	HDMI: Video: 480i, 480p, 576i, 576p, 720p, 1080i, 1080p, 1080/24p Audio: PCM lineal de dos canales 32; 44,1 y 48 kHz, 16, 20 y 24 bits, Dolby Digital AUDIO (HDMI IN 4)
AURICULAR	Minitoma estéreo
AUDIO OUT (Salida de audio)	500 mVrms (típico)
DIGITAL AUDIO OUT (OPTICAL) (Salida de audio digital óptica)	Señal de audio óptica digital PCM/Dolby Digital
PC IN (Entrada de PC)	Subminiatura D de 15 contactos, RGB analógico
PC/HDMI 4 AUDIO IN (Entrada de audio de PC/HDMI 4)	Minitoma estéreo
LAN	Conector 10BASE-T/100BASE-TX (La velocidad de la conexión podría variar en función del entorno de red. No se garantizan la tasa de comunicación ni la calidad de comunicación 10BASE-T/100BASE-TX para este TV.)* <sup>1</sup>
USB/DLNA	Consulte el i-Manual para el formato compatible. (DLNA está disponible únicamente)

\*1 Para conexiones LAN, utilice un cable 10BASE-T/100BASE-TX de categoría 7 (no se suministra).

- La disponibilidad de los accesorios opcionales dependerá de las existencias.
- El diseño y las especificaciones están sujetos a cambios sin previo aviso.

# SPECIFICATIONS

Nombre del modelo KDL-	46EX405	40EX406	40EX405	32EX405	32EX306 32EX305
Alimentación y otras especificaciones					
Requisitos de alimentación	110 V -240 V ca, 50/60 Hz				
Consumo energético en uso	197 W	155 W		114 W	113 W
en DAM*2	15 W (Se puede oír un ruido durante la descarga pero es normal.)				
en espera	Menos de 0,2 W				
Tamaño de pantalla (cm) (medido diagonalmente)	116,8 46	101,6 40		80,0 31,5 (32 clase)	
Resolución del monitor	1.920 puntos (horizontal) × 1.080 líneas (vertical)				1.366 puntos (horizontal) × 768 líneas (vertical)
Bocina (mm) Gama completa con parlantes (2)	45 × 145	45 × 130			
Dimensiones con soporte (mm)	1.127 × 711 × 294	992 × 635 × 250		800 × 532 × 220	
sin soporte (mm)	1.127 × 674 × 102	992 × 598 × 100		800 × 497 × 97	
patrón de orificios de montaje mural (mm)	300 × 300			200 × 200	
tamaño de tornillos de montaje mural (mm)	M6 (longitud: consulte el diagrama de la página 15.)				
Peso con soporte (kg)	20,4	15,9		11,0	
sin soporte (kg)	18,1	13,9		9,5	
Accesorios opcionales	Cables de conexión / Kit de correa de soporte / Soporte de montaje mural				

\*2 El modo de adquisición de descarga (DAM) se utiliza para actualizaciones de software.

- La disponibilidad de los accesorios opcionales dependerá de las existencias.
- El diseño y las especificaciones están sujetos a cambios sin previo aviso.

## Verificación de los accesorios

### Cable de alimentación de ca (1)

(para modelos KDL-46EX405)

### Soporte de sobremesa (1)\*1

### Cómo fijar tornillos para el soporte de sobremesa (M5 × 16) (4)

### Cómo montar tornillos para el soporte de sobremesa (M4 × 10) (3)

### Control remoto (1)\*2

### Pilas de tamaño AAA (2)

\*1 Los modelos de 32" (80,0 cm) y 40" (101,6 cm) requieren montaje.

Consulte el otro folleto para ensamblar el soporte.

\*2 Consulte el nombre del modelo impreso en el control remoto.

# WARNINGS AND CAUTIONS

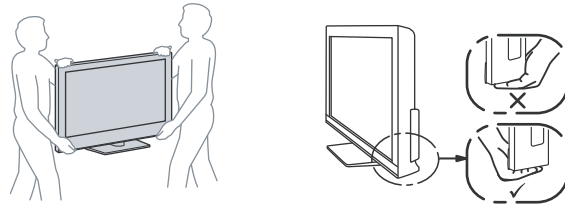
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## CAUTION

These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

## CARRYING THE TV

- Carry the TV with the adequate number of people; larger size TVs require two or more people.
- Correct hand placement while carrying the TV is very important for safety and to avoid damage.




## WARNING!!

An isolation transformer should be used during any service to avoid possible shock hazard, because of live chassis. The chassis of this receiver is directly connected to the AC power line.



## SAFETY-RELATED COMPONENT WARNING!!

Components identified by shading and  mark on the exploded views are critical for safe operation. Replace all components with Sony parts whose part numbers appear as shown in this manual or in supplements published by Sony. It is essential that all critical parts be replaced only with the part number specified in this manual to prevent electric shock, fire, or other hazard. Circuit adjustments that are critical for safe operation are identified in this manual. Follow these procedures whenever critical components are replaced or improper operation is suspected.

NOTE: Do not modify the original design without obtaining written permission from the manufacturer or you will void the original parts and labor guarantee.



# SAFETY-RELATED WARNING

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## USE CAUTION WHEN HANDLING THE LCD PANEL

When repairing the LCD panel, be sure you are grounded by using a wrist band.

When installing the LCD panel on a wall, the LCD panel must be secured using the 4 mounting holes on the rear cover.

- 1) Do not press on the panel or frame edge to avoid the risk of electric shock.
- 2) Do not scratch or press on the panel with any sharp objects.
- 3) Do not leave the module in high temperatures or in areas of high humidity for an extended period of time.
- 4) Do not expose the LCD panel to direct sunlight.
- 5) Avoid contact with water. It may cause a short circuit within the module.
- 6) Disconnect the AC power when replacing the backlight (CCFL) or inverter circuit.  
(High voltage occurs at the inverter circuit at 650Vrms.)
- 7) Always clean the LCD panel with a soft cloth material.
- 8) Use care when handling the wires or connectors of the inverter circuit. Damaging the wires may cause a short.
- 9) Protect the panel from ESD to avoid damaging the electronic circuit (C-MOS).

# SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or touching high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

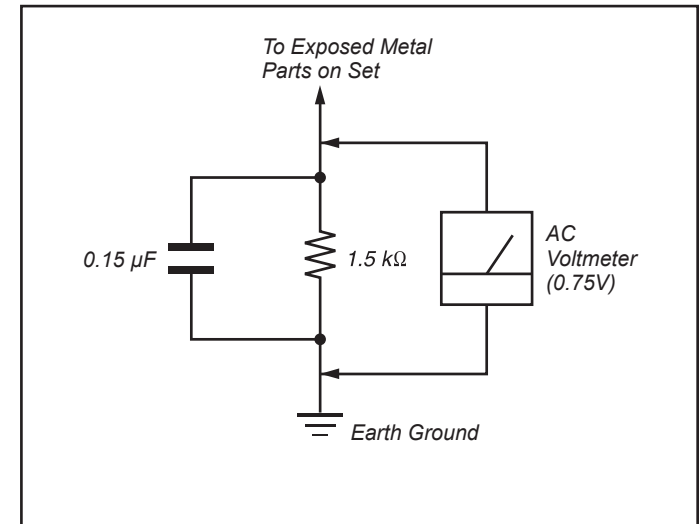


Figure A. Using an AC voltmeter to check AC leakage.

## LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instructions.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low voltage scale.

The Simpson's 250 and Sanwa SH-63TRD are examples of passive VOMs that are suitable. Nearly all battery-operated digital multimeters that have a 2 VAC range are suitable (see Figure A).

## HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is a guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground.

If the retaining screw is to be used as your earth ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms.

If a cold-water pipe is not accessible, connect a 60-to 100-watt trouble-light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side on the line; the lamp should light at normal brilliance if the screw is at ground potential (see Figure B).

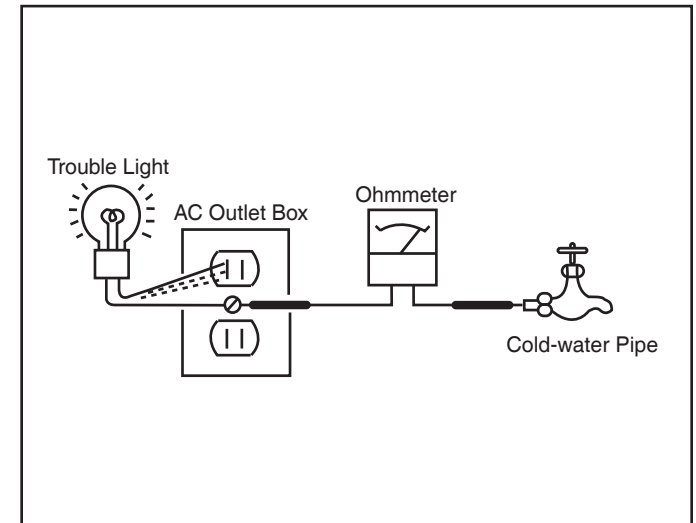


Figure B. Checking for earth ground.

# SELF DIAGNOSIS FUNCTIONS



## SELF DIAGNOSIS FUNCTION

The units in this manual contain a self-diagnostic function. If an error occurs, the STANDBY LED will automatically begin to flash. The number of times the LED flashes translates to a probable source of the problem. A definition of the STANDBY LED flash indicators is listed in the instruction manual for the user's knowledge and reference. If an error symptom cannot be reproduced, the remote commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

## DIAGNOSTIC TEST INDICATORS

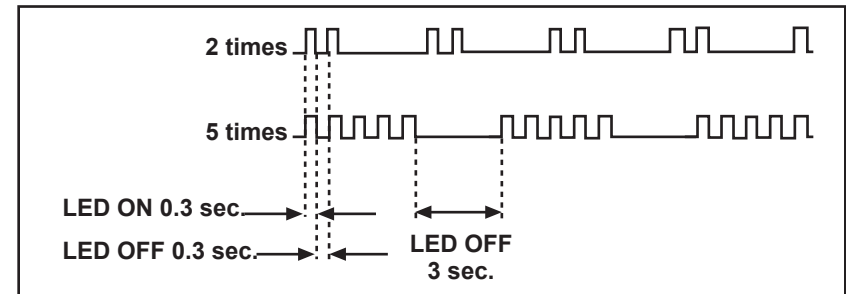
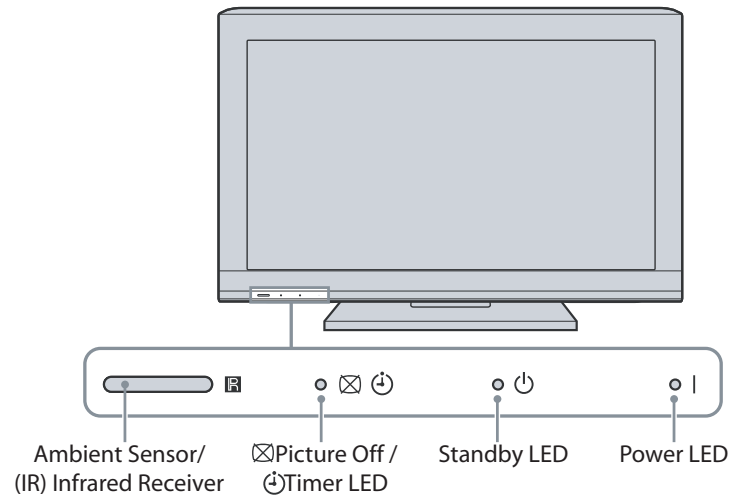
When an error occurs, the STANDBY LED will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the LED will identify the first of the problem areas.  
Result for all of the following diagnostic items are displayed on screen.

If the screen displays a "0", no error has occurred .

Diagnostic Item	Diagnostic Item Description	Number of times Standby LED blinks	Possible Location
RGB_SEN	RGB Sensor ACK Error	NA	NA
MAIN_POWER	Main Power Over Voltage Protection	2	G2LE (Power) Board (KDL-32EX305, KDL-32EX306 and KDL-32EX405 ONLY) G2HE (Power) Board (KDL-40EX405 and KDL-40EX406 ONLY) GD2 (Power) Board (KDL-46EX405 ONLY) BAL Board
DC_ALERT	DC Alert	3	BAL Board
DTT-WDT	DTT Error		G2LE (Power) Board (KDL-32EX305, KDL-32EX306 and KDL-32EX405 ONLY) G2HE (Power) Board (KDL-40EX405 and KDL-40EX406 ONLY) GD2 (Power) Board (KDL-46EX405 ONLY)
AUD_PROT	Audio Error Detection		
BALANCER	Panel Balancer Error	4	BAL Board
TCON_ERR	TCON Error	5	LCD Panel
HFR_ERR	HFR Error		TCON Control MT Board
P_ID_ERR	Panel ID NVM Error		BAL Board
BACKLITE	Backlight Error	6	BAL Board
TEMP_ERR	Temperature Error	7	BAL Board
FAN_ERR	Fan Error (Not Detected; Display Only)	NA	NA

# SELF DIAGNOSIS FUNCTIONS

## STANDBY LED FLASH COUNT



# SELF DIAGNOSIS FUNCTIONS

## VIEWING THE SELF CHECK DIAGNOSTIC LIST

For errors with symptoms such as “power sometimes shuts off” or “screen sometimes goes out” that cannot be confirmed, it is possible to bring up past occurrences of a failure for confirmation on the Self Check diagnostic screen:

1. TV must be in standby mode. (Power off).
2. Press the following buttons on the Remote Commander within a second of each other:

**DISPLAY** → Channel **5** → Volume **-** → **POWER**.

↑ \* NOTE: This differs from accessing Service Adjustments Mode (Volume +)

SELF CHECK				
Error count (00-99)	Error history (Last failure time beforehand)	Error history (Failure time before last)	Error history (The last failure time)	Item name
000	RGB_SEN			
002	MAIN_POWE	0501210811	0412311234	0311111825
003	DC_ALERT1			
003	AUD_PROT			
003	DTT_WDT			
004	BALANCER			
005	HFR_ERR			
005	TCON_ERR			
005	P_ID_ERR			
006	BACKLITE			
007	TEMP_ERR			
007	FAN_ERR			
010	RESERVED			
011	RESERVED			
12345	00333	06789		
Panel operation time by hour (MAX:65535)				
Boot count (MAX:65535)				
Total operation time by hour (MAX:65535)				

# ***SELF DIAGNOSIS FUNCTIONS***

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## **CLEARING THE SELF CHECK DIAGNOSTIC LIST**

Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen after you have completed the repairs to be sure you have cleared the result display to "0".

1. Error history and Error count :Press the Channel **8** ➡ Channel **0** .
2. Panel operation time :Press the Channel **7** ➡ Channel **0** .

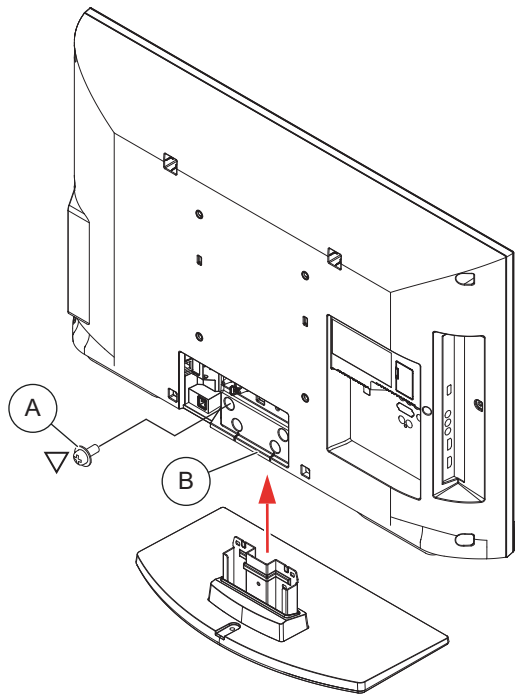
## **EXITING THE SELF CHECK DIAGNOSTIC SCREEN**

1. To exit the Self Diagnostic screen, turn off the power to the TV by pressing the POWER button on the remote or the POWER button on the TV.

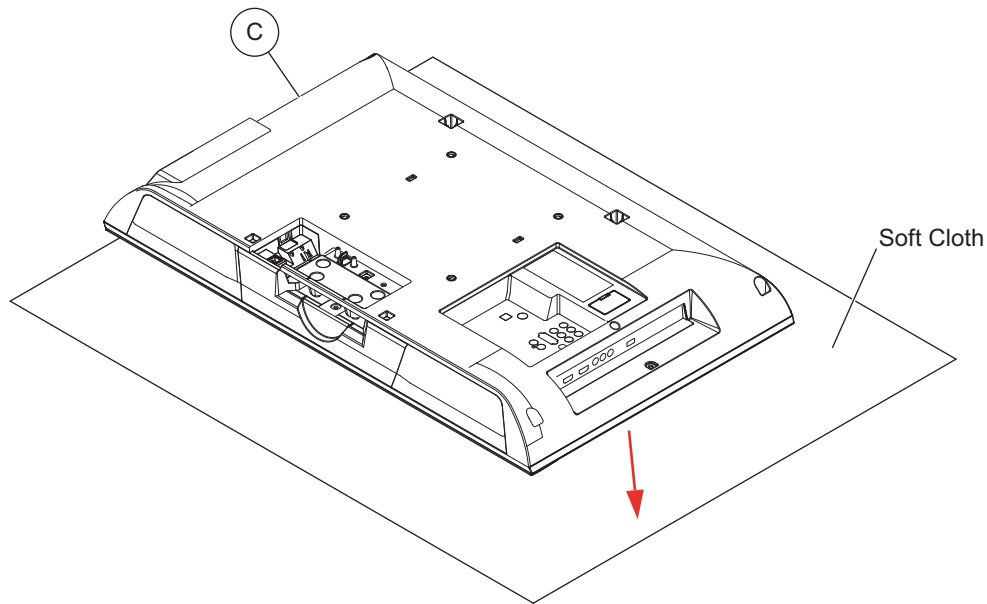
# SEC 1. DISASSEMBLY/PART NUMBER INFORMATION

## 1-1. TABLE-TOP STAND ASSEMBLY REMOVAL

- Ⓐ Remove 4 screws from Table-Top Stand Assembly
- Ⓑ Lift TV set up to detach from Table-Top Stand Assembly



- Ⓒ Gently place the TV set face down onto a soft cloth




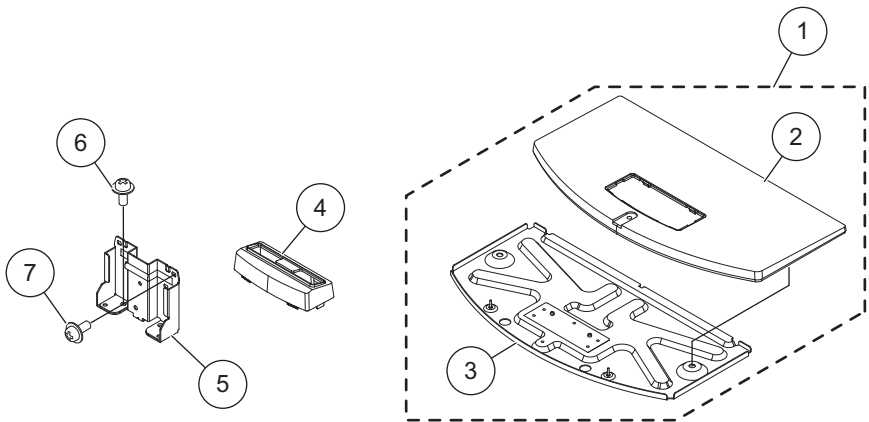
Components not identified by a part number or description are not stocked because they are seldom required for routine service.


The component parts of an assembly are indicated by the reference numbers in the far right column of the parts list and within the dotted lines of the diagram.

\* Items marked with an asterisk are not stocked since they are seldom required for routine service. Expect some delay when ordering these components.

NOTE: The components identified by shading and  mark are critical for safety. Replace only with part number specified.

NOTE: The components identified by a red outline and a  mark contain confidential information. Specific instructions must be adhered to whenever these components are repaired and/or replaced. See Appendix A: Encryption Key Components in the back of this manual.



REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]	REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
1	X-2514-986-1	BASE (M3B) ASSEMBLY (KDL-32EX305/32EX306/32EX405 ONLY)		5	4-174-808-01	NECK (M3B) (KDL-32EX305/32EX306/32EX405 ONLY)	
1	X-2514-987-1	BASE (ML3B) ASSEMBLY (KDL-40EX405/40EX406 ONLY)		* 5	4-158-355-01	NECK (ML3B) (KDL-40EX405/40EX406/46EX405 ONLY)	
1	X-2514-988-1	BASE (L3B) ASSEMBLY (KDL-46EX405 ONLY)		6	4-159-298-01	SCREW, +PSW M4X10 (SCREWS TO ATTACH NECK TO BASE ASSEMBLY)	
2	4-158-391-01	COVER, STAND (ML3B) (KDL-40EX405/40EX406 ONLY)		7	2-580-608-01	SCREW, +PSW M5X16 (SCREWS TO ATTACH TABLE-TOP STAND TO LCD TV) For product protection and safety reasons, Sony strongly recommends that you use the screws provided with the TV <b>CAUTION: These screws cannot be used to secure the TV to the Wall Mount Brackets</b>	
3	4-158-374-01	BASE, STAND (ML3B) (KDL-40EX405/40EX406 ONLY)			2-580-608-01	SCREW, +PSW M5X16	
4	4-174-813-01	COVER, NECK (M3B) (KDL-32EX305/32EX306/32EX405 ONLY)					
4	4-158-401-01	COVER, NECK (ML3B) (KDL-40EX405/40EX406/46EX405 ONLY)					

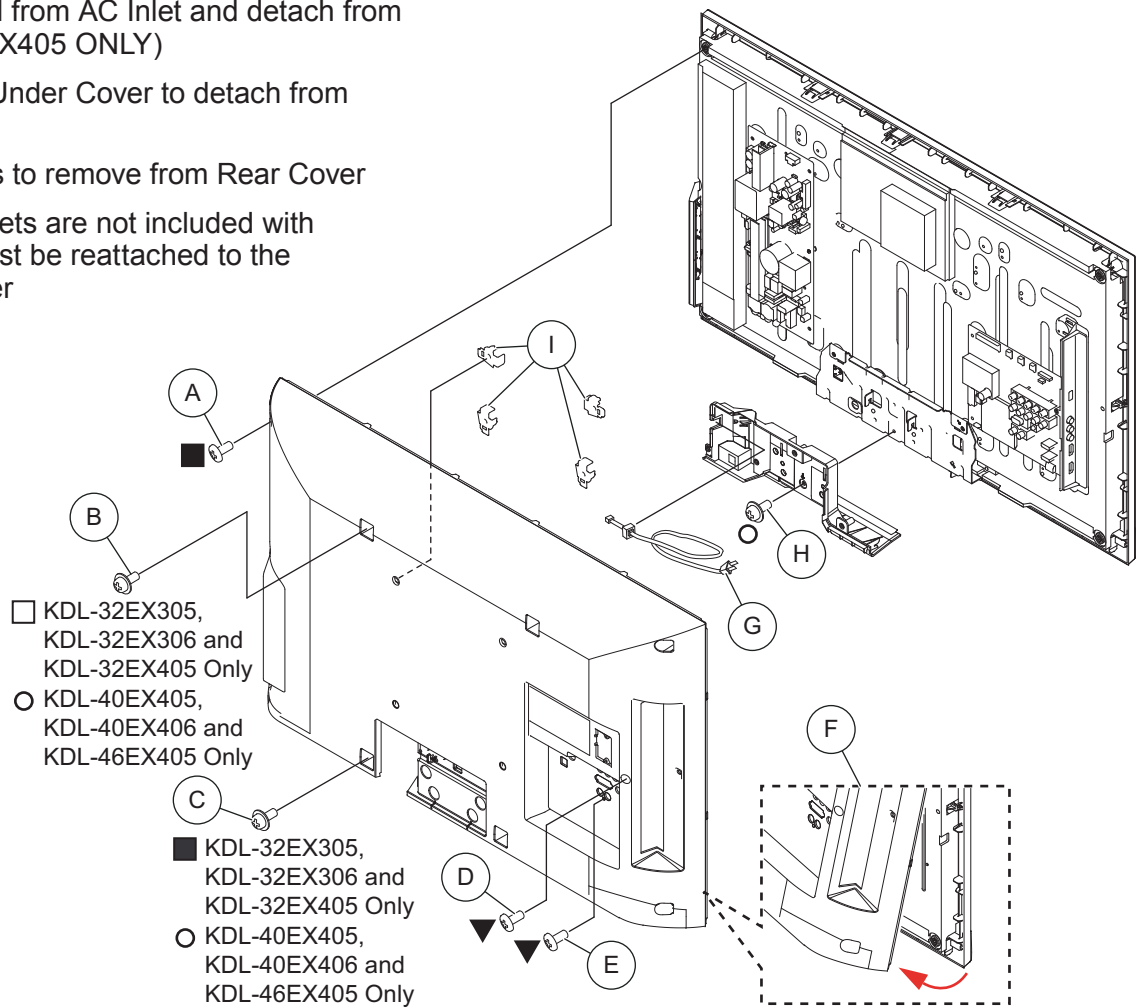


# DISASSEMBLY/PART NUMBER INFORMATION

## 1-2. REAR COVER AND VESA BRACKET REMOVAL

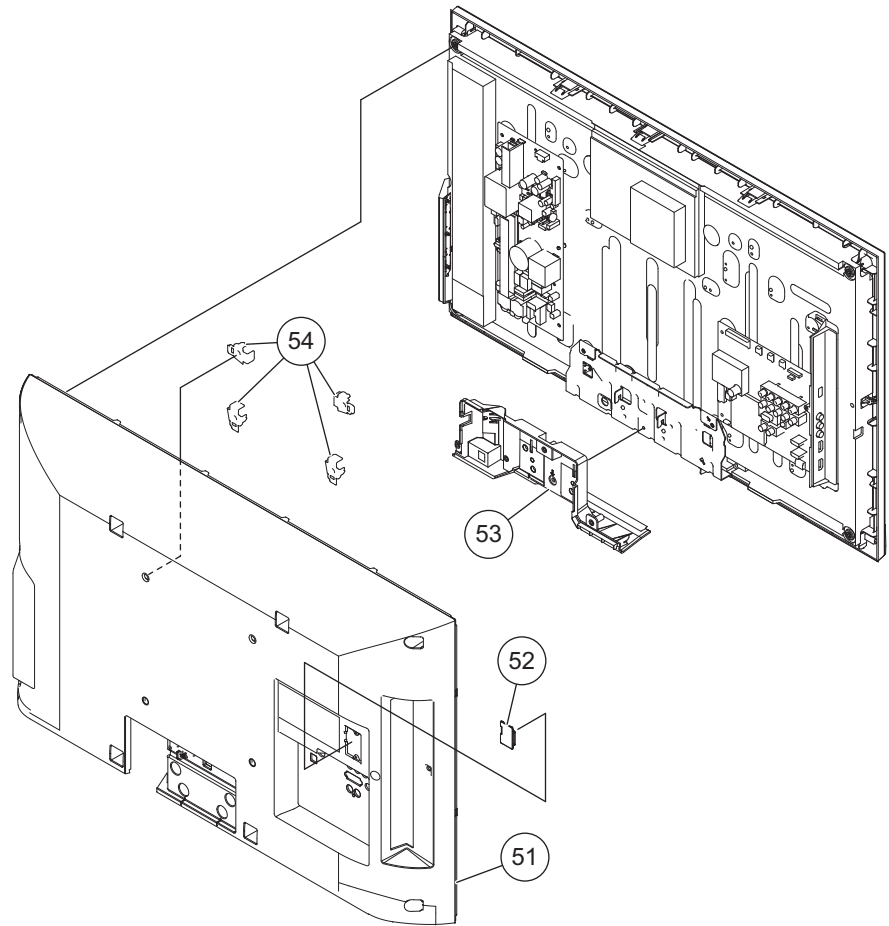
- Ⓐ Remove screws from Rear Cover
  - 10 from KDL-32EX305/32EX306/32EX405 ONLY
  - 8 from KDL-40EX405/40EX406 ONLY
  - 11 from KDL-46EX405 ONLY
- Ⓑ Remove 2 screws from Rear Cover Top-Center
- Ⓒ Remove 2 screws from Rear Cover Bottom-Center (KDL-40EX405/40EX406/46EX405 ONLY)
- Ⓓ Remove 1 screw from Terminal position
- Ⓔ Remove 1 screw from Side Jack position
- Ⓕ Lift up Rear Cover from bottom to remove from Bezel Assembly
- Ⓖ Disconnect Power Cord from Power (G2LE/G2HE) Board and detach from Under Cover (ALL EXCEPT KDL-46EX405)  
  
Disconnect Power Cord from AC Inlet and detach from Under Cover (KDL-46EX405 ONLY)
- Ⓗ Remove 1 screw from Under Cover to detach from Bottom Frame
- Ⓘ Slide out Vesa Brackets to remove from Rear Cover

NOTE: The Vesa Brackets are not included with the Rear Cover and must be reattached to the replacement Rear Cover



NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

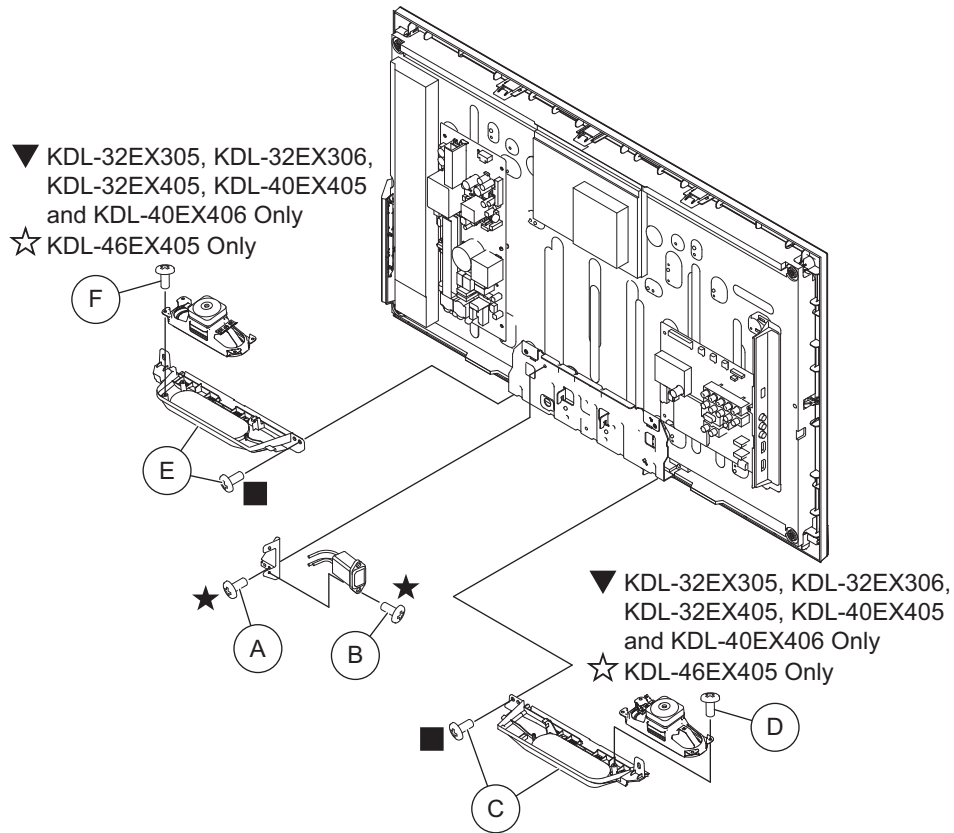
NOTE: The components identified by a red outline and a 🔒 mark contain confidential information. Specific instructions must be adhered to whenever these components are repaired and/or replaced. See Appendix A: Encryption Key Components in the back of this manual.



REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]	REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
51	4-172-264-21	REAR COVER (32) (KDL-32EX305/32EX306/32EX405 ONLY)		54	4-167-326-01	BRACKET, VESA (S) (ALL EXCEPT KDL-46EX405)	
51	4-167-455-11	REAR COVER (40) (KDL-40EX405/40EX406 ONLY)		54	4-168-272-01	BRACKET, VESA (S) (KDL-46EX405 ONLY)	
51	4-166-856-21	REAR COVER (46) (KDL-46EX405 ONLY)			2-580-640-01	SCREW, +BVTP 4X16 TYPE2 IT-3	
52	3-297-324-02	COVER, ECS			2-580-595-01	SCREW, +PSW M3X12 (KDL-32EX305/32EX306/32EX405 ONLY)	
53	4-166-138-01	COVER, UNDER (32) (KDL-32EX305/32EX306/32EX405 ONLY)			7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
53	4-166-136-01	COVER, UNDER (37) (KDL-40EX405/40EX406 ONLY)			4-159-298-01	SCREW, +PSW M4X10	
53	4-166-136-11	COVER, UNDER (37) (KDL-46EX405 ONLY)					

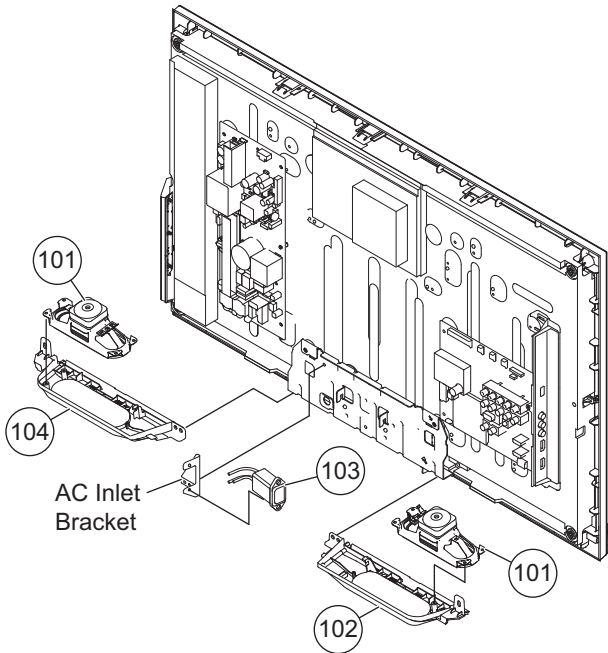
1-3. AC INLET, SPEAKER BRACKETS AND LOUDSPEAKERS REMOVAL

- Ⓐ Remove 1 screw from AC Bracket to detach from Bottom Frame (KDL-46EX405 ONLY)
- Ⓑ Remove 1 screw from AC Inlet to detach from AC Bracket (KDL-46EX405 ONLY)
- Ⓒ Remove 1 screw from Speaker Bracket Left to detach from Bezel Assembly (ALL EXCEPT KDL-46EX405)  
Slide-out Speaker Bracket Left to detach from Bezel Assembly (KDL-46EX405 ONLY)
- Ⓓ Remove 2 screws from Loudspeaker to remove from Speaker Bracket Left
- Ⓔ Remove 1 screw from Speaker Bracket Right to detach from Bezel Assembly (ALL EXCEPT KDL-46EX405)  
Slide-out Speaker Bracket Right to detach from Bezel Assembly (KDL-46EX405 ONLY)
- Ⓕ Remove 2 screws from Loudspeaker to remove from Speaker Bracket Right



NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: The components identified by a red outline and a 🔒 mark contain confidential information. Specific instructions must be adhered to whenever these components are repaired and/or replaced. See Appendix A: Encryption Key Components in the back of this manual.

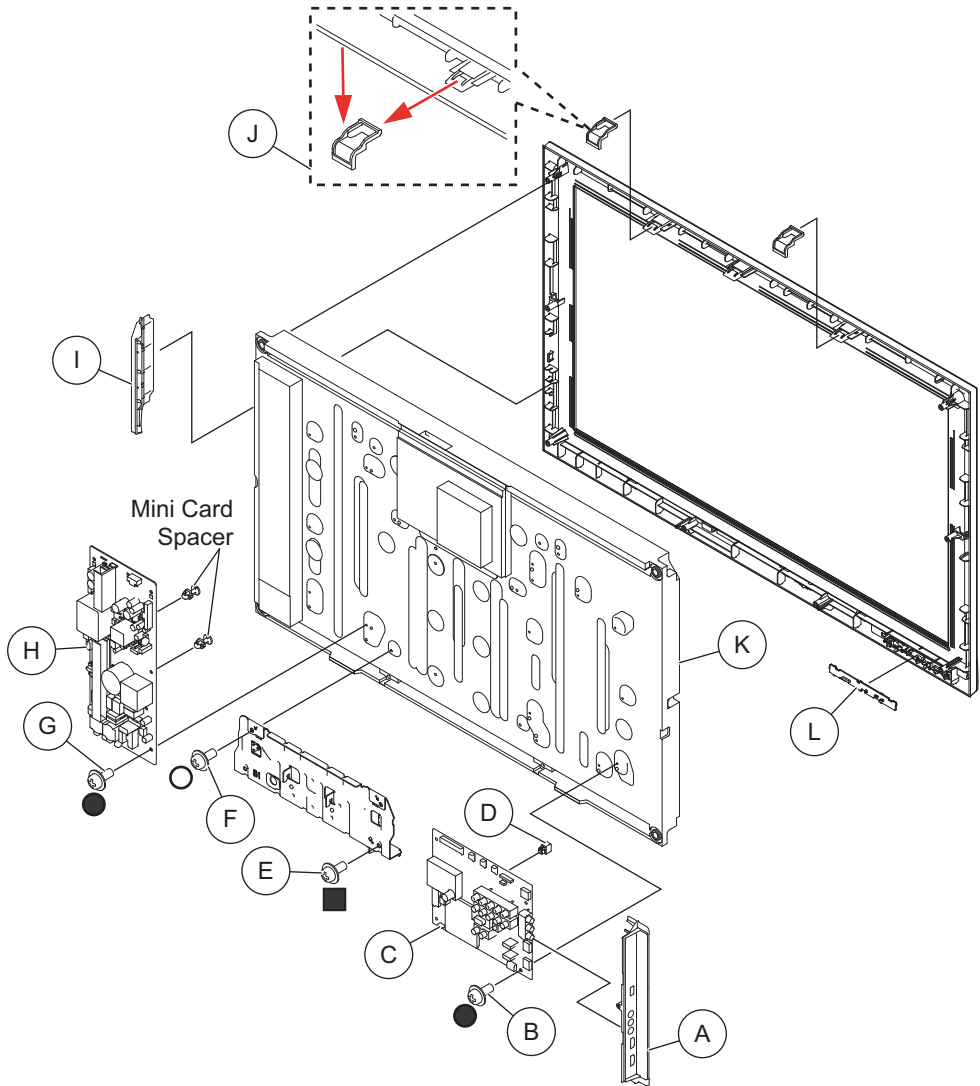


REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]	REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
101	1-858-364-22	LOUDSPEAKER (ALL EXCEPT KDL-46EX405)		⚠ 103	1-842-104-31	AC INLET (KDL-46EX405 ONLY)	
101	1-858-371-11	LOUDSPEAKER (4.5X20CM) (KDL-46EX405 ONLY)		104	4-166-134-01	BRACKET, SP (32R) (KDL-32EX305/32EX306/32EX405 ONLY)	
102	4-166-133-01	BRACKET, SP (32L) (KDL-32EX305/32EX306/32EX405 ONLY)		104	4-166-132-01	BRACKET, SP (40R) (KDL-40EX405/40EX406 ONLY)	
102	4-166-131-01	BRACKET, SP (40L) (KDL-40EX405/40EX406 ONLY)		104	X-2547-455-1	SP BRACKET (46R) ASSEMBLY (KDL-46EX405 ONLY)	
102	X-2547-454-1	SP BRACKET (46L) ASSEMBLY (KDL-46EX405 ONLY)		■	2-580-640-01	SCREW, +BVTP 4X16 TYPE2 IT-3	
				▼	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
				★	2-580-629-01	SCREW, +BVST 3X8 (KDL-46EX405 ONLY)	
				☆	4-167-964-01	SCREW, +PWTP2 4X16 (KDL-46EX405 ONLY)	

1-4. G2LE/G2HE/GD2 (POWER) BOARD, BAL BOARD, LCD PANEL, AND HLR BOARD REMOVAL

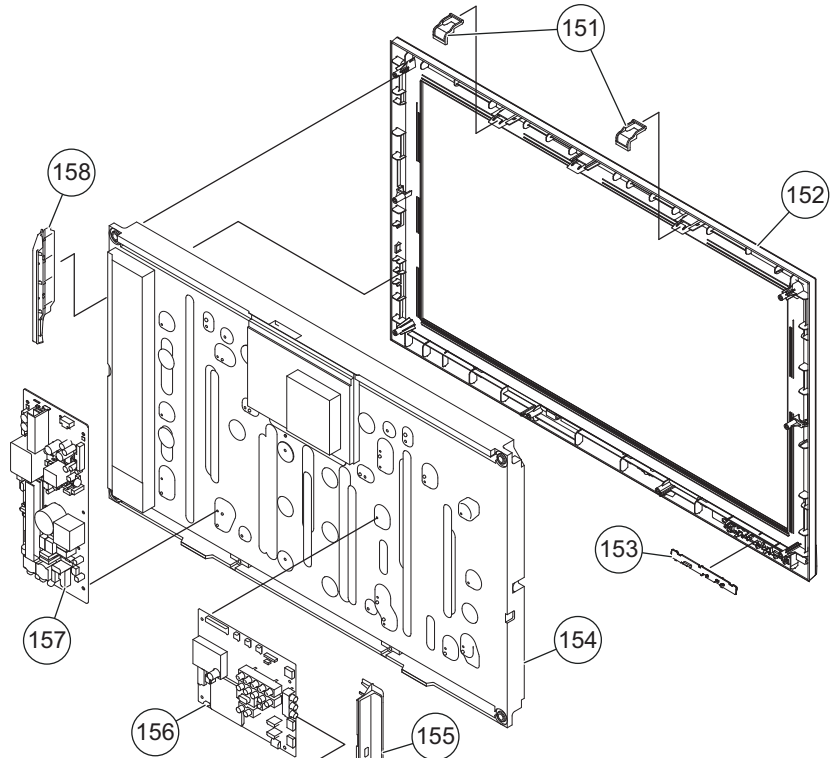
- Ⓐ Slide Side Jack Bracket to right-side of BAL Board to detach from position
- Ⓑ Remove 4 screws from BAL Board
- Ⓒ Disconnect 5 connectors from BAL Board
- Ⓓ Remove 1 PWB Holder to detach BAL Board from LCD Panel
- Ⓔ Remove 2 screws from Bottom Frame to detach from Bezel Assembly (KDL-40EX405/40EX406/46EX405 ONLY)
- Ⓕ Remove 2 screws from Bottom Frame to detach from LCD Panel
- Ⓖ Remove 4 screws from G2LE/G2HE/GD2 (Power) Board
- Ⓗ Disconnect 4 connectors from G2LE/G2HE (Power) Board  
Disconnect 6 connectors from GD2 (Power) Board
- Ⓘ Lift up Switch Unit and disconnect 1 connector to remove from Bezel
- Ⓙ Press down on Panel Support and slide-out to remove from Bezel Assembly
- Ⓚ Carefully Lift up Panel to remove from Bezel Assembly
- Ⓛ Disconnect 1 connector from HLR Board and release clips, then lift up to detach from position

NOTE: The Mini Card Spacers and PWB Holder are not included with the Boards and must be replaced when replacing the Boards.



NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: The components identified by a red outline and a 🔒 mark contain confidential information. Specific instructions must be adhered to whenever these components are repaired and/or replaced. See Appendix A: Encryption Key Components in the back of this manual.



REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]	REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
151	NA	SUPPORT, PANEL FOR ALL SUPPORT PANEL PART NUMBER INFORMATION REFER TO THE LCD PANELS SERVICE MANUAL		🔒 156	A-1761-435-A	BAL BOARD, COMPLETE (KDL-32EX305/32EX306 ONLY)	
152	X-2547-553-1	BEZEL ASSEMBLY (CY32 LS) (KDL-32EX305 ONLY)		🔒 156	A-1761-434-A	BAL BOARD, COMPLETE (KDL-32EX405/40EX405/-40EX406/46EX405 ONLY)	
152	X-2547-647-1	BEZEL ASSEMBLY (CY32D GM) (KDL-32EX306 ONLY)		NOTE: For BAL Board replacement, please refer to section 2-2. Adjustments After Replacing the BAL Board or LCD Panel			
152	X-2547-547-1	BEZEL ASSEMBLY (CY32 DS) (KDL-32EX405 ONLY)		NOTE: Final software is not installed on this BAL Board. Install the update after replacing this board using the instructions provided with the software.			
152	X-2547-548-1	BEZEL ASSEMBLY (CY40 DS) (KDL-40EX405 ONLY)		157	1-474-200-11	G2LE (POWER) BOARD, COMPLETE (KDL-32EX305/32EX306/32EX405 ONLY)	
152	X-2547-648-1	BEZEL ASSEMBLY (CY40D GM) (KDL-40EX406 ONLY)		157	1-474-202-21	G2HE (POWER) BOARD, COMPLETE (KDL-40EX405/40EX406 ONLY)	
152	X-2547-555-2	BEZEL ASSEMBLY (CY46 DS) (KDL-46EX405 ONLY)		157	1-474-205-11	GD2 (POWER) BOARD, COMPLETE (KDL-46EX405 ONLY)	
153	A-1753-637-A	HLR BOARD, MOUNTED		158	1-487-725-11	SWITCH UNIT	
154	NA	LCD PANEL FOR ALL LCD PANEL PART NUMBER INFORMATION REFER TO THE LCD PANELS SERVICE MANUAL		■	2-580-640-01	SCREW, +BVTP 4X16 TYPE2 IT-3	
155	4-175-711-01	BRACKET, SIDE JACK		●	2-580-592-01	SCREW, +PSW M3X8	
				○	4-159-298-01	SCREW, +PSW M4X10	




1-5. CLEANING THE LCD PANEL


CAUTION: When cleaning the TV, be sure to unplug the power cord to avoid any chance of electric shock.

Clean the cabinet of the TV with a dry soft cloth.

Wipe the LCD screen gently with a soft cloth.









- ◆ Stubborn stains may be removed with a cloth slightly moistened with a solution of mild soap and warm water.
- ◆ If using a chemically pretreated cloth, please follow the instruction provided on the package.
- ◆ Never use strong solvents such as a thinner, alcohol or benzine for cleaning.
- ◆ Periodic vacuuming of the ventilation openings is recommended to ensure to proper ventilation.

NOTE: The components identified by shading and  mark are critical for safety. Replace only with part number specified.









NOTE: The components identified by a red outline and a  mark contain confidential information. Specific instructions must be adhered to whenever these components are repaired and/or replaced. See Appendix A: Encryption Key Components in the back of this manual.

1-6. SCREW LEGEND









KDL-32EX305, KDL-32EX306 and KDL-32EX405

P/N	DISCRIPTION	REMARKS	TOTAL
 2-580-640-01	SCREW, +BVTP 4X16 TYPE2 IT-3	RC(10), SPKR BRKT-L(1), SPKR BRKT-R(1)	12
 2-580-595-01	SCREW, +PSW M3X12	RC TOP-CENTER(2)	2
 7-685-648-79	SCREW, +BVTP 3X12 TYPE2 IT-3	RC to SIDE JACK(1), RC to TRMNL AREA(1), SPKR-L(2), SPKR-R(2)	6
 2-580-608-01	SCREW, +PSW M5X16	TABLE-TOP STAND(4)	4
 2-580-592-01	SCREW, +PSW M3X8	G2LE(4), BAL(4)	8
 4-159-298-01	SCREW, +PSW M4X10	UNDER COVER(1), BTM FRM(2), NECK to BASE(3)	6
 2-580-629-01	SCREW, +BVST 3X8	NOT IN THIS MODEL	0
 4-167-964-01	SCREW, +PWTP2 4X16	NOT IN THIS MODEL	0

KDL-40EX405 and KDL-40EX406

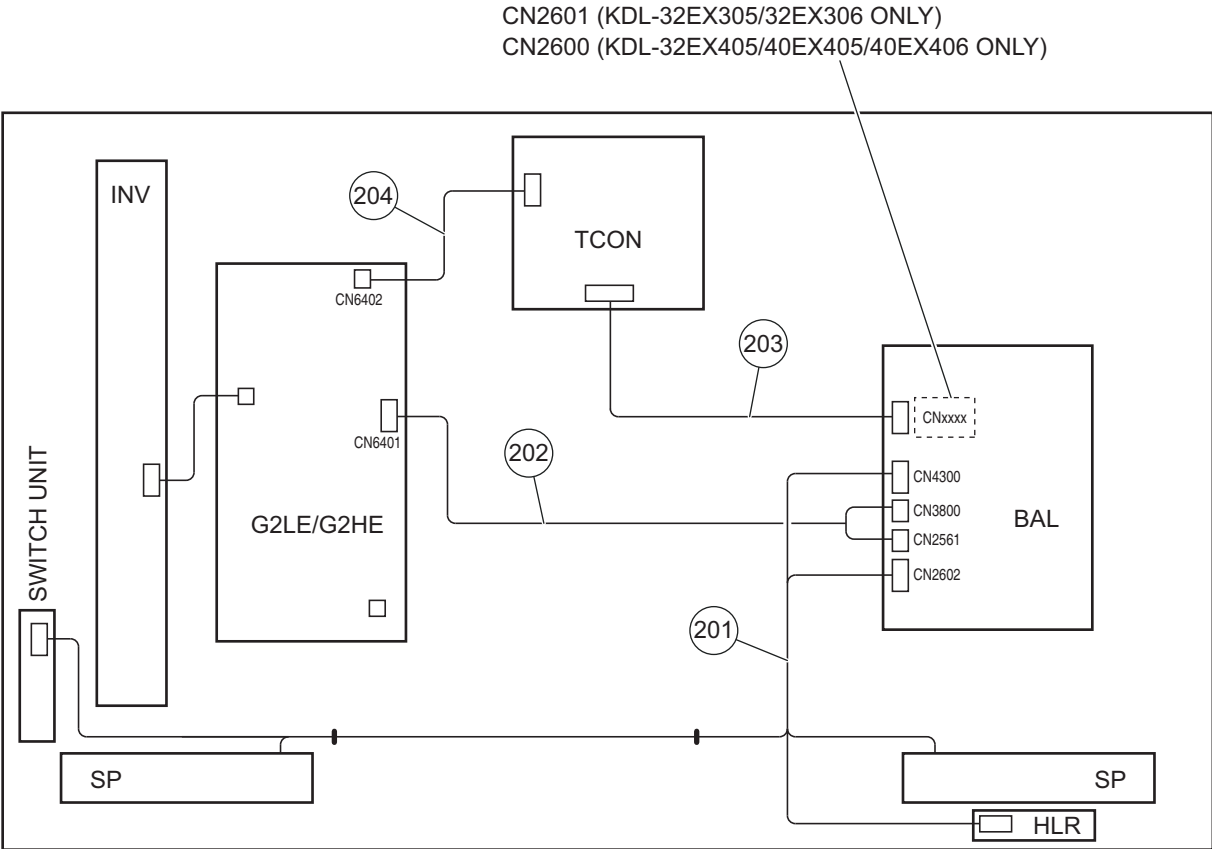
P/N	DISCRIPTION	REMARKS	TOTAL
 2-580-640-01	SCREW, +BVTP 4X16 TYPE2 IT-3	RC(8), SPKR BRKT-L(1), SPKR BRKT-R(1), BTM FRM to BEZ ASSY(2)	12
 2-580-595-01	SCREW, +PSW M3X12	NOT IN THIS MODEL	0
 7-685-648-79	SCREW, +BVTP 3X12 TYPE2 IT-3	RC to SIDE JACK(1), RC to TRMNL AREA(1), SPKR-L(2), SPKR-R(2)	6
 2-580-608-01	SCREW, +PSW M5X16	TABLE-TOP STAND(4)	4
 2-580-592-01	SCREW, +PSW M3X8	G2HE(4), BAL(4)	8
 4-159-298-01	SCREW, +PSW M4X10	RC TOP-CENTER(2), RC BTM-CENTER(2), UNDER COVER(1), BTM FRM(2), NECK to BASE(3)	10
 2-580-629-01	SCREW, +BVST 3X8	NOT IN THIS MODEL	0
 4-167-964-01	SCREW, +PWTP2 4X16	NOT IN THIS MODEL	0

KDL-46EX405


P/N	DESCRIPTION	REMARKS	TOTAL
 2-580-640-01	SCREW, +BVTP 4X16 TYPE2 IT-3	RC(11), BTM FRM to BEZ ASSY(2)	13
 2-580-595-01	SCREW, +PSW M3X12	NOT IN THIS MODEL	0
 7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	RC to SIDE JACK(1), RC to TRMNL AREA(1)	2
 2-580-608-01	SCREW, +PSW M5X16	TABLE-TOP STAND(4)	4
 2-580-592-01	SCREW, +PSW M3X8	GD2(4), BAL(4)	8
 4-159-298-01	SCREW, +PSW M4X10	RC TOP-CENTER(2), RC BTM-CENTER(2), UNDER COVER(1), BTM FRM(2), NECK to BASE(3)	10
 2-580-629-01	SCREW, +BVST 3X8	AC BRKT to BTM FRAME(1), AC INLET to AC BRKT(1)	2
 4-167-964-01	SCREW, +PWTP2 4X16	SPKR-L to SPKR ASSY-L(2), SPKR-R to SPKR ASSY-R(2)	4


1-7. CONNECTORS

1-7-1. ALL EXCEPT KDL-46EX405

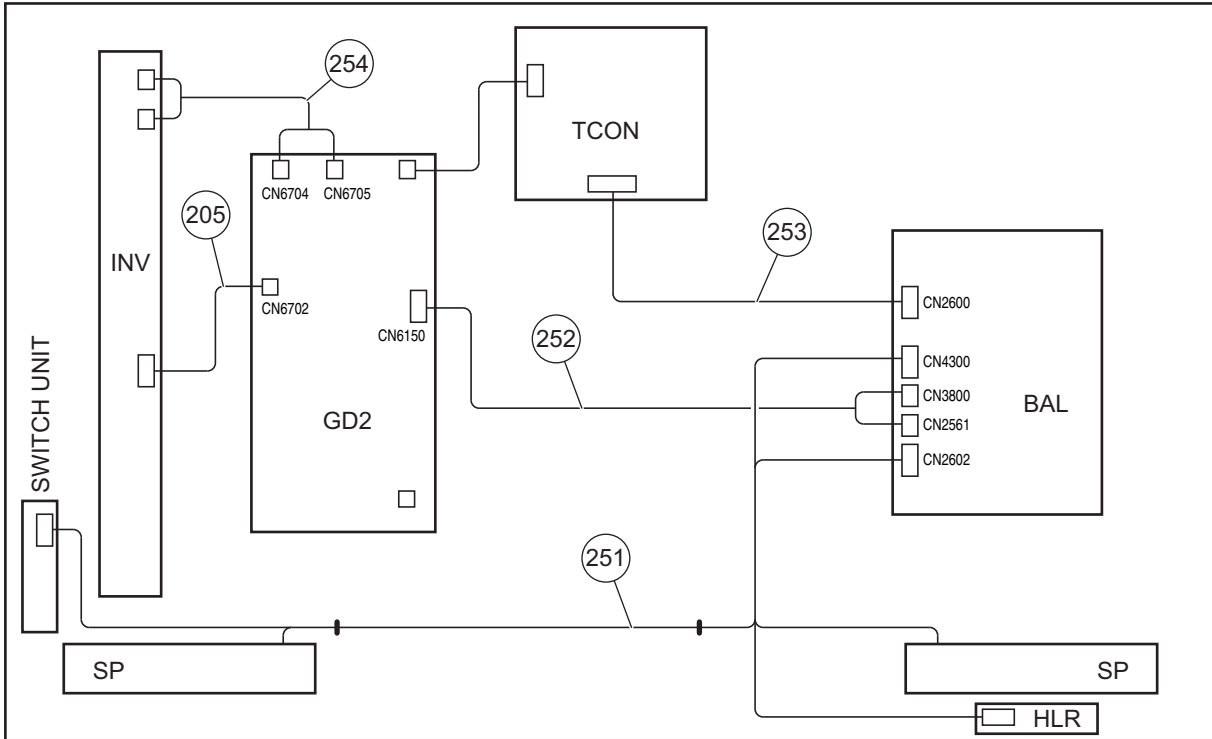


REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]	REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
201	1-910-101-28	HARNESS ASSEMBLY (KDL-32EX305/32EX306/32EX405 ONLY)		203	1-837-515-12	(LVDS) FLEXIBLE FLAT CABLE 30P (KDL-32EX305/KDL-32EX306 ONLY)	
201	1-910-101-30	HARNESS ASSEMBLY (KDL-40EX405/40EX406 ONLY)		203	1-837-516-11	(LVDS) FLEXIBLE FLAT CABLE (KDL-32EX405 ONLY)	
202	1-910-060-07	CONNECTOR ASSEMBLY 15P (KDL-32EX305/32EX306/32EX405 ONLY)		* 203	1-837-520-11	(LVDS) FLEXIBLE FLAT CABLE (KDL-40EX405/40EX406 ONLY)	
202	1-910-060-15	CONNECTOR ASSEMBLY 15P (KDL-40EX405/40EX406 ONLY)		* 204	1-910-060-08	CONNECTOR ASSEMBLY 14P (KDL-32EX305/32EX306/32EX405 ONLY)	
				* 204	1-910-060-16	CONNECTOR ASSEMBLY 14P (KDL-40EX405/40EX406 ONLY)	

NOTE: The components identified by shading and  mark are critical for safety. Replace only with part number specified.

NOTE: The components identified by a red outline and a  mark contain confidential information. Specific instructions must be adhered to whenever these components are repaired and/or replaced.  
See Appendix A: Encryption Key Components in the back of this manual.

1-7-2. KDL-46EX405 ONLY



REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]	REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
251	1-910-101-31	HARNESS ASSY		253	1-837-522-11	(LVDS) FLEXIBLE FLAT CABLE	
252	1-910-060-19	CONNECTOR ASSY 15P		254	1-837-317-21	CONNECTOR ASSY	
				255	1-910-060-20	CONNECTOR ASSY 5P	

# DISASSEMBLY/PART NUMBER INFORMATION

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## 1-8. ACCESSORIES & PACKING

⚠	1-837-479-11	AC POWER-SUPPLY CORD (ALL EXCEPT KDL-46EX405)
⚠	1-837-765-11	POWER-SUPPLY CORD SET (KDL-46EX405 ONLY)
	3-299-071-03	FLYER, SAFETY
	4-180-188-31	MANUAL, INSTRUCTION
*	4-176-351-11	SUPPLEMENT(STAND INSTALLATION)

## 1-9. MISCELLANEOUS

7-632-452-24	TAPE (NO.303) 18MMX35M YEL
X-2348-140-3	SUPPORT BELT KIT

## 1-10. REMOTE COMMANDER

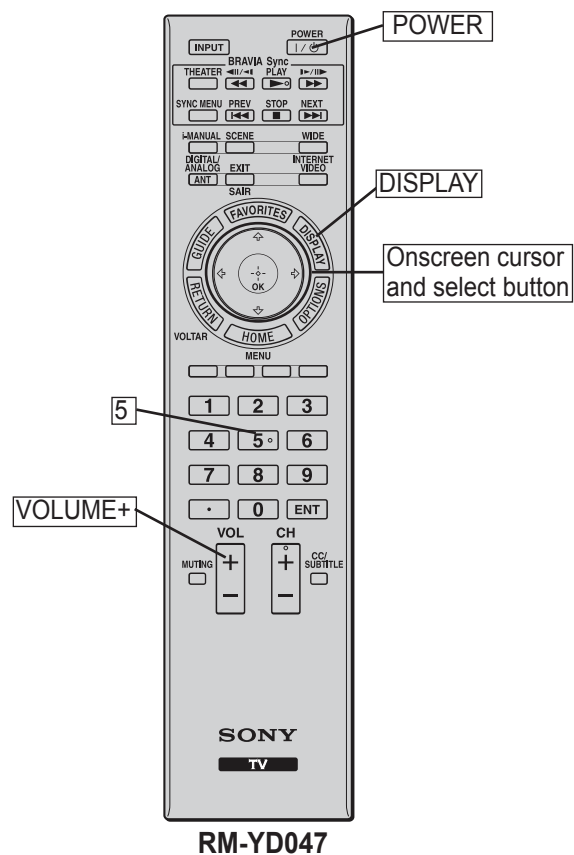
1-487-702-11	REMOTE COMMANDER (RM-YD047)
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# SEC 2. SERVICE ADJUSTMENTS

## 2-1. ACCESSING SERVICE ADJUSTMENT MODE

1. TV must be in standby mode. (Power off).
2. Press the following buttons on the Remote Commander within a second of each other:

DISPLAY → Channel 5 → Volume + → POWER.



DIGITAL	SERVICE
001 OP	
000 VERS	---
<MAIN>	<SUB>
DM1.301J00AA	SM1.010W00AA
M2.105C	SB1.000W00AA
DD1.016J00AA	SD1.010W00AA
(DM13 01J00AA)	RF01.05
WP00.521J00AA	ID1C117081
ID1C117081	LTY320AB01
PID04020000	
WF:2.0.0.99	<BEM>
WF:0B	BM1.012W00LU
Camera FW	BB1.000W00LU
Camera FW	BD1.011J46LUX
	-----

SAMPLE SERVICE MENU

# SERVICE ADJUSTMENTS

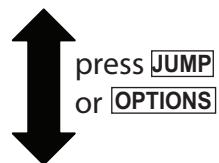
## 2-1-1. VIEWING THE SERVICE MENUS

Use the Remote Commander to view the **Digital**, **Chassis** and **Sub** Service Menus and their options.

- To display the **Service Menu** that contains the Category you want to adjust, press **JUMP** or **OPTIONS** on the Remote Commander.

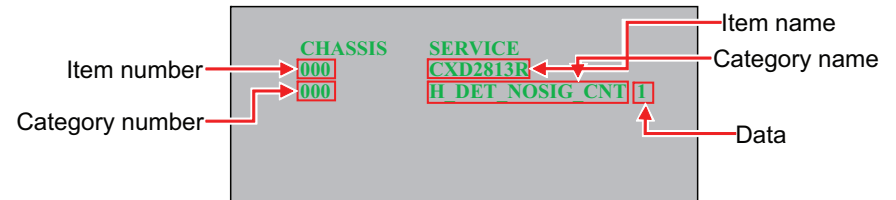
DIGITAL	SERVICE
001 OP	---
000 VERS	---
<MAIN>	<SUB>
DM1.301J00AA	SM1.010W00AA
M2.105C	SB1.000W00AA
DD1.016J00AA	SD1.010 W00AA
(DM13 01J00AA)	RF01.05
WP00.521J00AA	ID1C117081
ID1C117081	LTY320AB01
PID04020000	
WF:2.0.0.99	<BEM>
WF:0B	BM1.012W00LU
Camera FW	BB1.000W00LU
Camera FW	BD1.011J46LUX
	-----

Sample Digital Service Menu



CHASSIS	
000	CXD2813R
000	H_DET_NOSIG_CNT 1

Within each Service Menu are Categories and data information.



Sample Chassis Service Menu



# SERVICE ADJUSTMENTS

## 2-1-2. USING THE REMOTE COMMANDER TO VIEW OR CHANGE SERVICE DATA

Use the buttons on the Remote Commander to access the Service Menu items and adjust the Data Values.

**DISPLAY** → Channel **5** → Volume **+** → **POWER**

4. To change the **Category**, press **2** to move to the Next Category or press **5** to go back to the Previous Category.  
**Note:** Pressing **2** or **5** only changes the Categories within the Service Menu displayed.
5. To change the **adjustment item**, press **1** to move to the Next Item or **4** to go back to the Previous Item.
6. To change the **Data Value**, press **3** to increase the Data Value or **6** to decrease the Data Value.
7. Press **MUTING** then press **0** to Write the changes.
8. To exit service mode, press **HOME** or turn the TV power off.

## 2-2. ADJUSTMENTS AFTER REPLACING THE BAL BOARD OR LCD PANEL

The following procedures must be completed after replacing the BAL Board or the LCD panel.

- ☒ Update the TV to the latest software version
- ☒ Select the Model
- ☒ Select the Destination
- ☒ Select the TV Color
- ☒ Verify model and panel information are correct
- ☒ Reconnect all cables

### 2-2-1. UPDATING THE SOFTWARE

After replacing the BAL Board or the LCD Panel, you must update the software to the latest version.

Before you begin

- ☒ Disconnect all cables (RF, External input, Ethernet, etc.) from the TV

Instructions for updating the software are included with the software package. After completing the software update, proceed to “Selecting the Model”.

# SERVICE ADJUSTMENTS

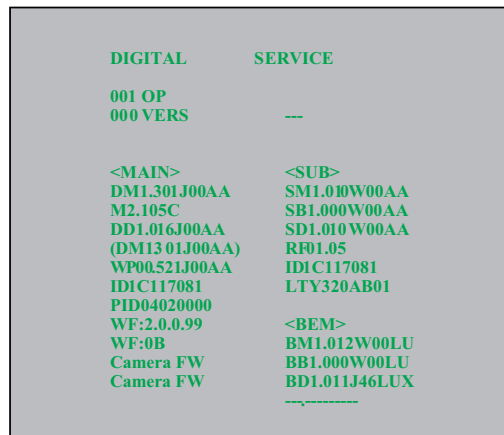
## 2-2-2. SELECTING THE MODEL

After replacing the BAL Board or LCD Panel, go into Service Mode to set the Model data value.

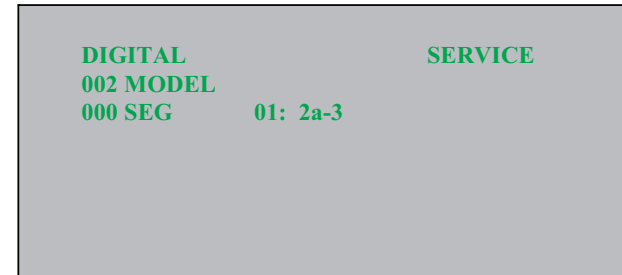
1. TV must be in standby mode. (Power off).
2. Access Service Mode.  
Press the following buttons on the Remote Commander within a second of each other:

**DISPLAY** → Channel **5** → Volume **+** → **POWER**

3. Display the **DIGITAL Service Menu**.  
NOTE: There are 3 Service Menus for this model, DIGITAL, CHASSIS, and SUB. If the DIGITAL Service Menu is not displayed, press **JUMP** or **OPTIONS** on the Remote Commander.

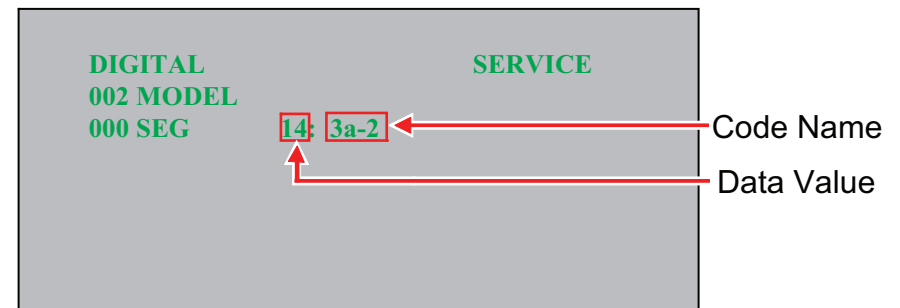


4. Press **2** to move to the **002 MODEL** (Next) category.



5. Using the table, press **3** to increase the data value or **6** to decrease the data value, to match the model of the TV.

Chassis	Model Name	Data Value	Code Name
AZ1-L	KDL-32EX305	14	3a-2
AZ1-L	KDL-32EX306	14	3a-2
AZ1-L	KDL-32EX405	14	3a-2
AZ1-L	KDL-40EX405	14	3a-2
AZ1-L	KDL-40EX406	14	3a-2
AZ1-L	KDL-46EX405	14	3a-2



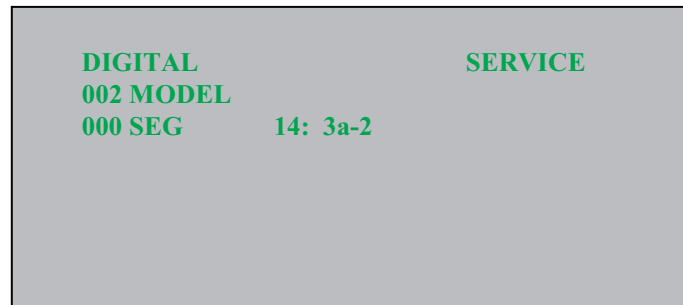
6. Proceed to "Selecting the Destination".

# SERVICE ADJUSTMENTS

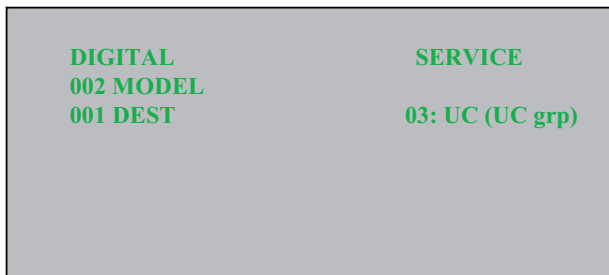
## 2-2-3. SETTING THE DESTINATION

After replacing the BAL Board or the LCD Panel, the destination location must be set.

**CAUTION:** Selecting the incorrect destination may require replacing the BAL Board.

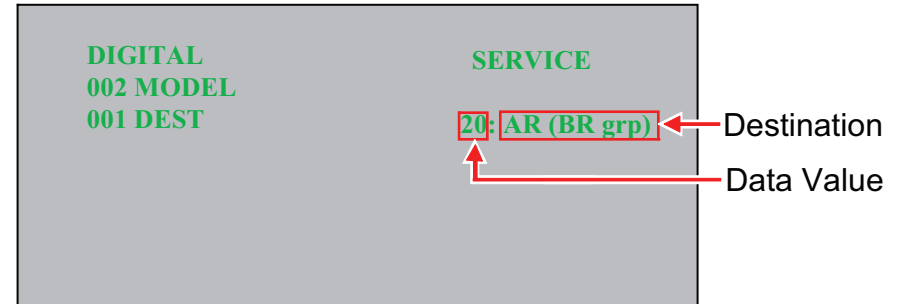


7. Press **[1]** to move to “001 DEST” sub Category.



8. Using the table, press **[3]** to increase the data value or **[6]** to decrease the data value, to select the destination of the TV.

GROUP	DESTINATION CODE	DATA VALUE	DESTINATION
BR grp	BR	13	BRAZIL
	AR	20	ARGENTINA



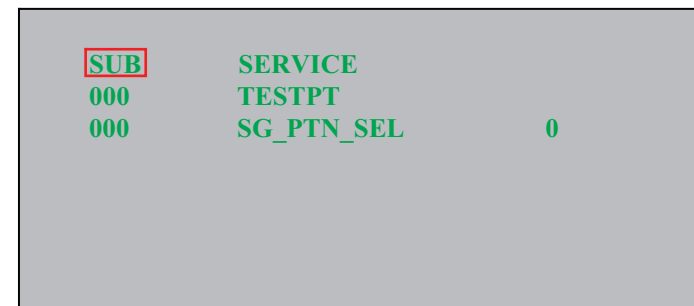
**CAUTION:** Verify the DESTINATION is set correctly before proceeding to the next step. If another destination Data Value is selected, it may possibly corrupt the software which would require a BAL Board replacement.

9. Proceed to “Selecting the TV Color”.

## 2-2-4. SELECTING THE TV COLOR

Use the following instructions to set the color of the TV.

10. Press **[JUMP]** or **[OPTIONS]** until the **SUB Service Menu** displays.



11. Press **[2]** to until the “003 GAISO” Category displays.

# SERVICE ADJUSTMENTS

SUB	SERVICE	
003	GAISO	
000	VARIATION	0

12. Using the table, press **[0]** to increase the data value or **[6]** to decrease the data value, to select the color of the TV.

SUB	SERVICE	
003	GAISO	
000	VARIATION	1

Data Value

13. After verifying the correct TV color data value displays, press **[0]** to save (Write) the changes.  
 14. Exit Service Mode by pressing **[HOME]** or turn the TV power off.  
 15. Proceed to "Verifying the Model and Panel Information".

## 2-2-5. VERIFYING THE MODEL AND PANEL INFORMATION

After saving the changes to the service data, verify the information.

- TV must be in standby mode. (Power off).
- Access Service Mode.  
Press the following buttons on the Remote Commander within a second of each other:

**[DISPLAY]** → Channel **[5]** → Volume **[+]** → **[POWER]**

- Display the **DIGITAL Service Menu**.  
NOTE: There are 3 Service Menus for this model, DIGITAL, CHASSIS, and SUB. If the DIGITAL Service Menu is not displayed, press **[JUMP]** or **[OPTIONS]** on the Remote Commander.

MODEL		COLOR VARIATIONS			DATA VALUE
	Code Name	Bezel	Front Material	Color	GAISO
KDL-32EX305 KDL-32EX306 KDL-32EX405 KDL-40EX405 KDL-40EX406 KDL-46EX405	3a-2	black	smoke	Glossy Gun metallic (Back print)	0
				RED/BLUE	
			clear	Glossy Brown (Back print)	1
				Glossy Silver (Back print)	
		none		Matt Gun metallic (Front paint)	2
				Matt Silver (Front paint)	
		white	clear	Glossy Silver (Back print)	3
				Glossy Pink (Back print)	

# SERVICE ADJUSTMENTS

DIGITAL		SERVICE	
001 OP		---	
000 VERS			
<MAIN>		<SUB>	
DM1.301J00AA		SM1.010W00AA	
M2.105C		SB1.000W00AA	
DD1.016J00AA		SD1.010W00AA	
(DM13 01J00AA)		RF01.05	
WP00.521J00AA		ID1C117081	
ID25973693		LTY(Z)320AP04	
PID50720000			
WF:2.0.0.99		<BEM>	
WF:0B		BM1.012W00LU	
Camera FW		BB1.000W00LU	
Camera FW		BD1.011J46LUX	
		-----	

Model Name	Model ID	Product ID	Panel ID	Code Name
KDL-32EX305	25973693	50720000	LTY(Z)320AP04	3a-2
KDL-32EX305	25973694	50720000	T315XW04 V0	3a-2
KDL-32EX305	25973693	50720000	LTY(Z)320AP04	3a-2
KDL-32EX305	25973694	50720000	T315XW04 V0	3a-2
KDL-32EX306	25973693	50720000	LTY(Z)320AP04	3a-2
KDL-32EX306	25973694	50720000	T315XW04 V0	3a-2
KDL-32EX306	25973693	50720000	LTY(Z)320AP04	3a-2
KDL-32EX306	25973694	50720000	T315XW04 V0	3a-2
KDL-32EX405	25973689	50720000	LTY(Z)320HM01	3a-2
KDL-32EX405	25973695	50720000	T315HW04 V0	3a-2
KDL-32EX405	25973689	50720000	LTY(Z)320HM01	3a-2
KDL-32EX405	25973695	50720000	T315HW04 V0	3a-2
KDL-40EX405	25973697	50720000	LTY(Z)400HM01	3a-2
KDL-40EX405	25973698	50720000	T400HW03 V0	3a-2
KDL-40EX405	25973697	50720000	LTY(Z)400HM01	3a-2
KDL-40EX405	25973698	50720000	T400HW03 V0	3a-2
KDL-40EX406	25973697	50720000	LTY(Z)400HM01	3a-2
KDL-40EX406	25973698	50720000	T400HW03 V0	3a-2
KDL-40EX406	25973697	50720000	LTY(Z)400HM01	3a-2
KDL-40EX406	25973698	50720000	T400HW03 V0	3a-2
KDL-46EX405	25973685	50720000	LTY(Z)460HM01	3a-2
KDL-46EX405	25973685	50720000	LTY(Z)460HM01	3a-2

- Using the table, verify the Model ID and the Product ID match the information in the Service Menu.

- Exit Service Mode by pressing **HOME** or turn the TV power off.
- Proceed to "Reconnecting All Cables".

## 2-2-6. RECONNECTING ALL CABLES

After completing the changes to service mode, reconnect all the cables (RF, External input, Ethernet, etc.) to the TV then verify the TV set picture. If necessary, proceed to "White Balance Adjustments".

# SERVICE ADJUSTMENTS

## 2-3. WHITE BALANCE ADJUSTMENTS

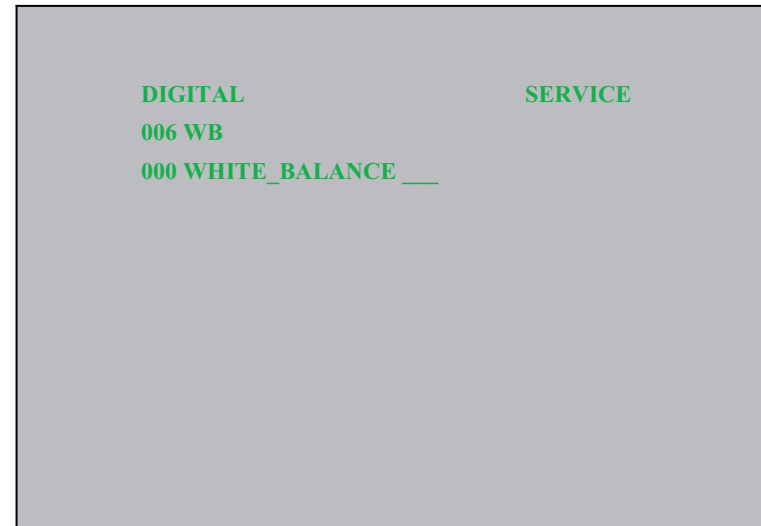
White Balance adjustment data is located on the Digital Service Menu.

1. TV must be in Standby Mode. (POWER off).
2. Press the following buttons on the Remote Commander within a second of each other:

**DISPLAY** → Channel **5** → Volume **+** → **POWER**

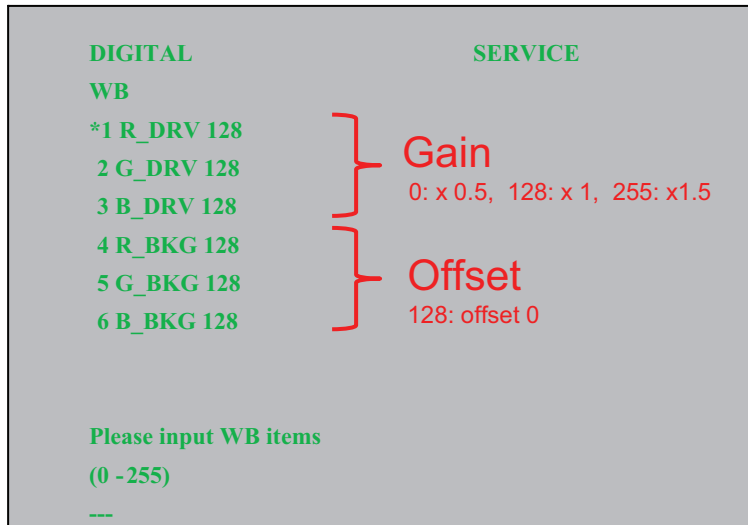
NOTE: There are 3 Service Menus for this model, DIGITAL, CHASSIS, and SUB. If the DIGITAL Service Menu is not displayed, press **JUMP** or **OPTIONS** on the Remote Commander.

3. Press **2** to until the “**006 WB**” Category displays.



4. Press **0** to enter White Balance Adjustment mode.
5. To select the White Balance Adjustment setting that needs to be changed, do the following:
  - a. To select R\_DRV, press **1**.
  - b. To select G\_DRV, press **2**.
  - c. To select B\_DRV, press **3**.
  - d. To select R\_BKG, press **4**.
  - e. To select G\_BKG, press **5**.
  - f. To select B\_BKG, press **6**.
6. After selecting the White Balance setting, press **ENT** to display the edit screen.  
The screen displays a “Please input WB items” message.


# SERVICE ADJUSTMENTS



7. Using the numbers buttons on the remote, enter the Data Value for the White Balance setting (value must be between 1 and 255).
8. Press **ENT** to WRITE (save) the changes.
9. To exit White Balance Adjustment, press **JUMP** or **OPTIONS**

## 2-4. RESETTING THE TV TO FACTORY CONDITION

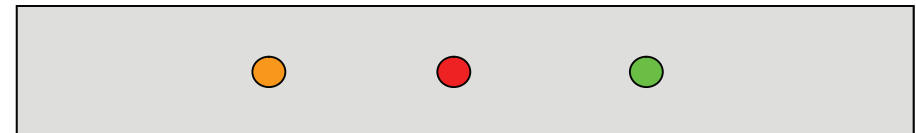
Use the following instructions to restore the User Adjustments and Channel Memory settings to the preset factory conditions.

1. While holding down the  on the Remote Commander, press the POWER button on the TV Switch Unit of the set.

The set restarts and displays the Initial Setup screen. This may take several minutes.

## 2-4-1. RESETTING THE TV TO FACTORY CONDITION USING SERVICE MODE

1. TV must be in Standby Mode. (POWER off).
2. Press the following buttons on the Remote Commander within a second of each other:  
**DISPLAY** → Channel **5** → Volume **+** → **POWER**.
3. If necessary, press **JUMP** or **OPTIONS** to go to DIGITAL mode.
4. Press **8**.  
“SERVICE” changes to green RST.
5. Press **MUTING**.  
RST executes the command and displays EXE.
6. Press **0**.  
EXE-RST displays green, then red indicating the TV is writing the data.
7. When the process is complete the green SERVICE text displays and the LED display as shown below:



TIMER

Standby

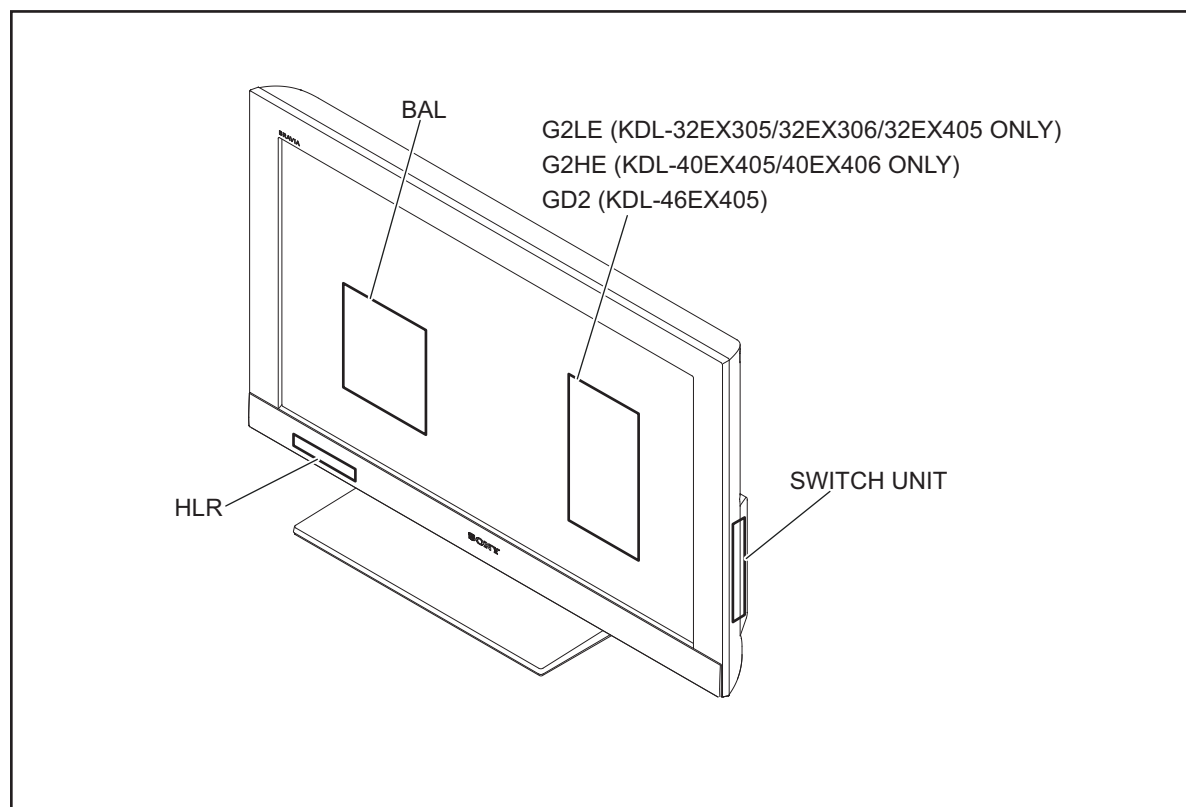
POWER

8. Cycle AC Power (Unplug and Plug AC Cord from the AC Outlet).
9. The set restarts and displays the Initial Setup screen. This may take several minutes.

# SEC 3. DIAGRAMS

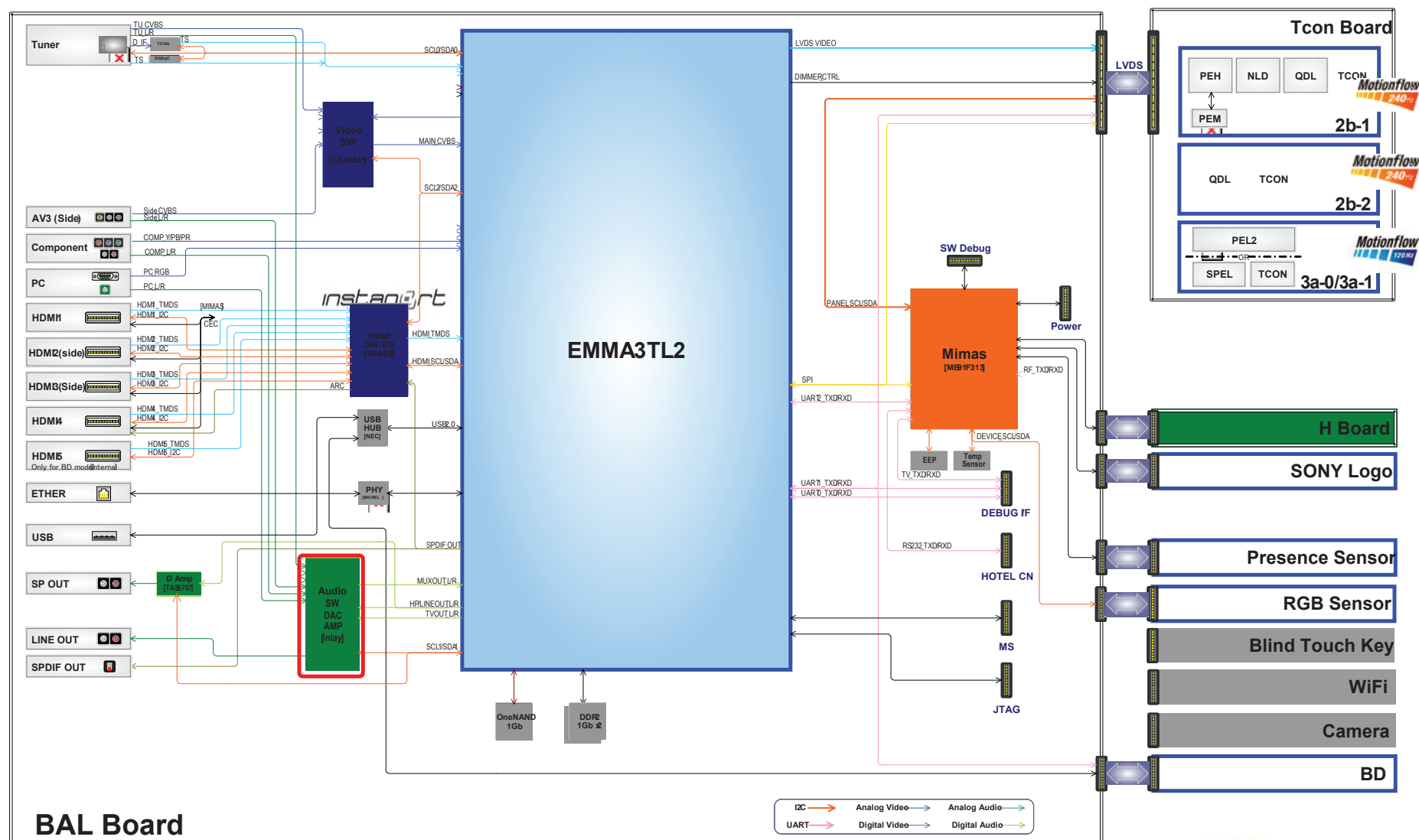
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## 3-1. CIRCUIT BOARDS LOCATION





## 3-2. BLOCK DIAGRAM





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